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ABSTRACT

Instructional technologists have traditionally used the scientific or rationalistic paradigm to study the instructional potential of pictures. Naturalistic and rationalistic inquiry differ in their views of reality and truth, the relationship between the investigator and the subject, the goals of inquiry, and the role of values in inquiry. Naturalistic inquiry on how pictures are used by students and teachers would take place in schools under normal instructional settings. Such studies could involve observation and interviews by a team of investigators who might note the types of pictures used, outcomes expected, teacher and learner behavior, subject matters, and instructional strategies. The resulting set of descriptive notes would be sifted, reorganized, and refined to identify recurring patterns that would aid in the understanding of the phenomena being examined. Data would be used to sharpen the focus for the next series of studies, which could include determining the types of instructional functions that can be served by pictures, or by examining the role of pictures within a given content area for a specific type of learning outcome or a particular type of learner. What is most important to the instructional technologist is not the identification of specific questions that can benefit from naturalistic inquiry but to understand and take advantage of its unique characteristics. Four references are listed. (LMM)

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# The Role of Naturalistic Inquiry on Research in the Instructional Uses of Pictures

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The Role of Naturalistic Inquiry on Research in the Instructional Uses of Pictures

Since its inception as a field of study, instructional technologists have used the scientific or rationalistic paradigm to study the instructional potential of pictures. In spite of numerous studies concerned with different aspects of pictures, concern has been raised about the products of such research to influence practice (Clark, 1983; Brody, in press). Some have pointed out that it is difficult to apply the results of this research to the classroom because the conditions under which the research has been conducted are too far removed from the realities of the typical instructional setting to be very meaningful. That is, many have concluded that emulating the practices of physical scientists may be inappropriate for social scientists who are primarily concerned with human beings and their problems.

This attention to the apparent lack of utility in research spreads far beyond those whose interests lie in the study of pictures of instructional technology; rather it has become a recurring theme sounded by a broad spectrum of educational practitioners and researchers. While some have ignored this concern over the lack of utility, others have looked to newer methods of educational inquiry. Of the newer paradigms, naturalistic inquiry have received the most attention and may have the greatest potential to influence the practices of instructional technology research in general and, more specifically, research on the

instructional uses of pictures.

Although an analysis and description of the techniques and procedures of naturalistic inquiry is not the major focus of this paper, an understanding of the basic elements of naturalistic inquiry is necessary before one can understand how it may be used to study the instructional potential of pictures. Thus, the next section of the paper will briefly describe the major components of naturalistic inquiry and to better understand these characteristics, briefly compare them to the major assumptions of rationalistic inquiry with which we are more familiar (Guba & Lincoln, 1982; Smith, 1983). Following this will be a more specific discussion of how these characteristics can be used in picture-related research.

## Basic Assumptions of Naturalistic Inquiry

Probably the major difference between the two types of research lies in their different views of reality and truth. The naturalist believes that reality is multifaceted and that identifying what is real depends on individual experience and interpretation. Furthermore, advocates of naturalistic inquiry believe that one can only study phenomena as coherent entities, that should not be separated into its constituent components. On the other hand, the rationalist believes that there exists a single, viable, concrete truth and that one can study phenomena by examining small components of that phenomenon. The truth could then be identified by combining the results of the various research on the constituent parts.

A second difference between the naturalistic and rationalistic paradigms concerns the relationship between the investigator and the subject. The naturalist believes that investigators and their instruments will always influence and interact with the subject. This is in marked contrast to the rationalist belief that investigators can maintain a safe distance from that which is being examined and that methodological safeguards can be implemented to help ensure that the act of investigation does not influence the outcomes of that investigation.

The development and formulation of generalizations is a linchpin of research based on the rationalistic paradigm. Such statements are usually considered true under all environmental and contextual situations. The naturalist, however, believes that it is impossible for phenomena to be free from contextual influences. Thus, naturalistic inquiry does not generally support the attempt to develop all-encompassing generalizations.

The manner in which rationalistic and naturalistic inquiry view the goals of inguiry is yet another characteristic which distinguishes the two paradigms. The manuralist maintains that the complexities of being human are so enormous that determining causality is a futile goal. Instead, naturalistic inquiry emphasizes the need to develop a broad, interpretive understanding of what is taking place. Whereas understanding is the major goal of naturalistic inquiry, determining causality is the ultimate goal of rationalist inquiry. That is, the primary purpose of

inquiry based on the rationalistic paradigm is to explain the relationship between different elements in the educational setting and use these relationships to develop universal laws of behavior.

Finally, naturalistic and rationalistic inquiry differ in the way each approaches the role of values in inquiry. The naturalist supports the notion that values are always part of inquiry and that the investigator can identify and acknowledge the relevant values so that they can be utilized in interpreting the phenomena being examined. In comparison, researchers using the rationalist paradigm believe that through the use of objective methodology, inquiry can be conducted which is free from the values of the investigator. If values free, then the results of inquiry can be considered to be representative of what actually exists.

## Naturalistic Inquiry and Picture Research

Although other areas of education have attempted to employ the methods of naturalistic inquiry, educational technology in general, and the study of pictures in particular, have not yet determined how the naturalistic paradigm can be of assistance. This section of the paper will try to provide some initial, if halting, reflections on how our understanding of the instructional potential of pictures can be expanded by conducting research based on naturalistic methodologies. Rather than pointing out how each research decision relates to one of the elements of naturalistic inquiry described above, only the most subtle

or significant connections will be indicated otherwise it will be left to the reader to make these associations.

While numerous studies using the rationalist paradigm have been conducted, we know little about how pictures, when included in instructional texts, are actually used by students and teachers. It is also doubtful whether rationalist research with its emphasis on highly structured and artificial treatments will ever be able to accurately describe this set of behaviors. On the other hand, naturalistic inquiry with its emphasis on conducting studies in their natural settings and qualitative research techniques would seem well-suited to examine how pictures are used by students and teachers. Let us now examine the form such research may take.

First of all, this research would take place in schools, under normal instructional settings. Unlike rationalist-based research, there will not be any manipulation of independent variables. Instead, members of the research team will spend considerable time observing how different teachers use pictures when teaching reading, as well as how students use them when reading a variety of instructional texts. The team may also observe teachers when they are planning their lessons and students when they are doing homework. Additionally, both teachers and students will be interviewed extensively, and asked questions about how they used pictures, which pictures they liked or disliked, which ones helped them the most, and any other questions which the interviewer thinks relevant. The

ability of interviewers to formulate questions as they go along and to alter the questions from subject to subject is in marked contrast to rationalistic inquiry which almost demands that identical questions be asked to all respondents.

To increase the trustworthiness of the study, it is also likely that there would be a team of investigators who will observe the same classes and interview some of the same people. All of the observers and interviewers would expend considerable effort in describing the instructional environment and context. The types of pictures used, outcomes expected, teacher behavior patterns, learner behavior, subject matter, and instructional strategies are just some of the many factors that would be noted by the researchers. Finally, the research team would spend considerable time at the study site to reduce the possibility of distortion due to the presence of the investigation team at the school and to ensure that the important environmental and contextual characteristics have been identified.

The result of all the observations and interviews will be a fairly substantial set of descriptive notes which the investigator must reduce to a more meaningful and manageable size. As the data is sifted, orgainzed, and refined, recurring patterns are identified. In the hypothetical study concerned with how pictures are used when they are incorporated into instructional texts, patterns related to some of the following may emerge:

--the way students used pictures to increase their understanding of textual material

--the way pictures are used by students with different characteristics

--which combinations of pictorial attributes are present when students believed a picture was particularly helpful

--the extent to which pictures influenced teacher behavior

--the relationship between pictures, student behavior and different types of subject matter and learning outcomes

--the procedures used by students to gain meaning from pictures

Unlike more conventional and traditional research practices, no attempts would be made to infer causal relationships for the patterns identified, nor would there be an attempt to use the results to explain what had occurred or to predict outcomes in other settings. Instead, the investigator would most likely try to use the patterns identified as a means of increasing the understanding of the phenomena being examined--the manner in which students and teachers use pictures included in instructional texts. Rather than using the data to prove or disprove generalizations or theories, the investigator would use the data to sharpen the focus for the next series of studies.

The number and variety of possible subsequent studies emerging from the initial, hypothetical study is impressive.

Studies in settings similar to those described previously could be conducted to determine the consistency of the observations across similar, yet different, settings. Taking a different approach, a future investigation could focus on one of the patterns or combinations of patterns which seem incongruent with previous research or which the investigator wishes to explore in greater detail. There is no reason, for example, why future studies utilizing the techniques of naturalistic inquiry could not examine the procedures used to gain meaning from pictures, regardless of whether or not they are included in an instructional text. Similarly, one could conduct a study concerned with the influence of pictures on the instructional behaviors and strategies of teachers.

## Conclusions

The hypothetical study briefly described above is but one of many areas related to the instructional uses of pictures that could be conducted within the framework of naturalistic inquiry. Determining the types of instructional functions that can be served by pictures or examining the role of pictures within a given content area, for a specific type of learning outcome, or for a particular type of learner are all potential candidates for research utilizing the naturalistic paradigm.

What is most improtant to the instructional technologist concerned with examining the instructional potential of pictures is not the identification of specific questions which can benefit from naturalistic inquiry, but

to understand and take advantage of the unique characteristics of this mode of research. It would appear most appropriate to develop a study around naturalistic methods when it is necessary to provide an exceptionally large data base for a previously ignored area of picture research: to determine what occurs in actual instructional settings: to generate working hypotheses for future studies when none are available; or to simply to increase one's understanding of the complexity of a problem area.

It is probably equally important to recognize that it is unlikely that inquiry based on either the naturalistic or rationalistic paradigm will answer all our questions about the instructional uses of pictures. Instead, it is likely that each paradigm will have an important role to serve in increasing our understanding of the relationship between pictures and effective instruction. On the other hand, instructional technologists have almost totally ignored naturalistic approaches to this area in favor of the more conventional rationalistic approaches. One can only wonder if we have failed to take advantage of a potentially powerful ally.

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